

### REMARKS

Claims 1-71 are pending in this application, with claims 1, 7-11, 21, 31, 33 34, 37-40 and 61 being independent. Claims 5, 6, 10-19 and 21-59 have been previously withdrawn from consideration.

The Examiner has objected to the title of the application as not being descriptive. Applicant has amended the title in accordance with the Examiner's suggestion.

Claim 20 has been rejected as being indefinite for reciting "claim 4 or claim 9". Claim 20 was previously amended (to eliminate the recitation "or claim 9") to overcome this rejection in the response that was submitted on March 27, 2003. Accordingly, applicant requests withdrawal of this rejection.

Independent claim 1 and dependent claims 2, 62, and 65 have been rejected as being unpatentable over Wilcoxen (U.S. Patent No. 5,059,556) in view of Ritsuo (JP 6338507). Claim 1 and claim 61, from which claims 62 and 65 depend, recite methods of manufacturing a semiconductor device that each include forming a semiconductor film over a substrate and "forming a material having a tensile stress of of  $8 \times 10^9$  dynes/cm<sup>2</sup> or more in contact with the semiconductor film." Applicant requests reconsideration and withdrawal of the rejection of claim 1 and dependent claim 2, which depends from claim 1, and dependent claims 62 and 65, which depend from claim 61, because neither Wilcoxen, Ritsuo, nor any proper combination of the two describes or suggests forming the recited material.

The platinum layer 14 of Wilcoxen, which the Examiner equates to the recited material, is deposited onto the etched polysilicon layer 12, which the Examiner equates to the recited semiconductor film. Through annealing, a platinum silicide layer 16 is formed from the combination of the polysilicon layer 12 and a portion of the platinum layer 14. The remaining portion of the platinum layer 14 and a sacrificial oxide layer 4 are then removed, leaving a free standing *platinum silicide microstructure* as shown in Fig. 8. See col. 4, line 61 to col. 5, line 6. Contrary to the Examiner's contention, Wilcoxen does not describe or suggest that the platinum layer 14 has a stress of  $8 \times 10^9$  dynes/cm<sup>2</sup> or more. Rather, Wilcoxen describes the *platinum*

*silicide microstructure* as having a stress of  $8 \times 10^9$  dynes/cm<sup>2</sup> or more. In particular, Wilcoxen describes the *platinum silicide microstructure* as generally having a stress of not more than  $10 \times 10^9$  dynes/cm<sup>2</sup>. See col. 5, lines 13-17.

Ritsuo does not overcome the deficiency of Wilcoxen. Ritsuo describes forming an epitaxial substrate 17 by ion implanting carbon 14 into a CZ substrate 11 and then forming an epitaxial layer 16 over the CZ substrate 11. Accordingly, Ritsuo does not describe or suggest forming the recited material.

For at least these reasons, applicant requests withdrawal of the rejection of claim 1 and dependent claims 2, 62, and 65.

Independent claim 7 has been rejected as being unpatentable over Wilcoxen in view of Ritsuo. Independent claim 7 recites a method of manufacturing a semiconductor device including forming a semiconductor film over a substrate and "forming a material in contact with the semiconductor film by LPCVD within a temperature range of between 500 and 900°C." Applicants request reconsideration and withdrawal of the rejection of claim 7 because neither Wilcoxen, Ritsuo, nor any proper combination of the two describes or suggests the recited material.

The Examiner contends that the platinum layer 14 of Wilcoxen, which the Examiner equates to the recited material, is "formed by sputtering LPCVD, and within a temperature range of between 500 and 900 C degrees (col. 4, lines 16-46)." Contrary to the Examiner's contention, platinum layer 14 is deposited through sputtering that is carried out at a temperature from about room temperature to about 300°C. See col. 4, lines 37-45. Wilcoxen describes the polysilicon layer 12, rather than the platinum layer 14, as being deposited using LPCVD at a temperature between 580°C and 700°C. See col. 4, lines 16-26.

For at least this reason, applicant requests withdrawal of the rejection of claim 7.

Independent claims 8 and 9 and dependent claims 3, 4, 20, 60, 63, 64, and 66 have been rejected as being unpatentable over Wilcoxen in view of Ritsuo and Yonehara (U.S. Patent No. 5,670,411).

Claims 3, 4, and 20 depend from claim 1. As discussed above in reference to claim 1, Wilcoxen and Ritsuo do not describe or suggest forming the material recited in claim 1. Yonehara, which describes a process for making a semiconductor on an insulator substrate, does not remedy this failure. In particular, Yonehara does not describe or suggest forming the recited

material having a tensile stress of  $8 \times 10^9$  dynes/cm<sup>2</sup> or more. Accordingly, applicant requests reconsideration and withdrawal of the rejection of claims 3, 4, and 20.

Each of independent claims 8 and 9 recites a method of manufacturing a semiconductor device that includes "forming a material ... in contact with the semiconductor film, whereby *an impurity element in the semiconductor film is gettered into the material*" (emphasis added). Applicants request reconsideration and withdrawal of this rejection because neither Wilcoxen, Ritsuo, Yonehara, nor any proper combination of the three describes or suggests the recited material.

Ritsuo describes forming an epitaxial substrate 17 by implanting a CZ substrate 11 with carbon 14 to form a gettering layer that is used to getter impurities in a deposited epitaxial layer 16. Wilcoxen describes depositing a polysilicon layer 12 on a silicon substrate 2, depositing a platinum layer 14 on the polysilicon layer 12, and forming a platinum silicide microstructure by annealing the combined polysilicon layer 12 and platinum layer 14. Applying Ritsuo's teaching to Wilcoxen results in the polysilicon layer 12, which the examiner equates to the recited semiconductor film, and the platinum layer 14, which the examiner equates to the recited material, being deposited over an epitaxial substrate, rather than over the silicon substrate 2. Such a combination, however, does not result in an impurity element in the polysilicon layer 12 being gettered into the platinum layer 14. Rather, the gettering that occurs is from the epitaxial layer on the substrate, where the integrated circuit components 24 are formed, to the buried carbon gettering layer. Thus, neither Wilcoxen, Ritsuo, nor any combination of the two describes or suggests the recited material. Yonehara does not remedy this failure.

Accordingly, for at least these reasons, applicant requests reconsideration and withdrawal of the rejection of claims 8 and 9, and claim 60, which depends from claim 9.

Claims 63, 64, and 66 depend from claim 61. As discussed above, neither Wilcoxen, Ritsuo, nor any combination of the two describes or suggests forming the material recited in claim 61. Yonehara does not remedy this failure. Accordingly, applicant requests reconsideration and withdrawal of the rejection of claims 63, 64, and 66.

Independent claim 61 has been rejected as being unpatentable over Wilcoxen in view of Ritsuo and Yamazaki (U.S. Patent No. 6,444,390).

As discussed above, neither Wilcoxon, Ritsuo, nor any combination of the two describes or suggests forming the material recited in claim 61. Yamazaki, which describes a process for producing a crystalline silicon film used for semiconductor thin film devices by using a group 14 element and applying a high temperature oxidizing treatment, does not remedy this failure. Yamazaki does not describe or suggest "forming a material having a tensile stress of  $8 \times 10^9$  dynes/cm<sup>2</sup> or more in contact with the semiconductor film, whereby *an impurity element is gettered into the material*" (emphasis added) as recited in claim 61. For at least this reason, neither Wilcoxon, Ritsuo, Yamazaki, nor any combination of the three describes or suggests forming the recited material. Therefore, applicant requests reconsideration and withdrawal of the rejection.

Dependent claims 67-71, which depend from independent claims 1, 7-9, and 61, respectively, have been rejected as being unpatentable over Wilcoxon in view of Ritsuo and Zhang (U.S. Patent No. 6,140,165). As discussed above, neither Wilcoxon, Ritsuo, nor any combination of the two describes or suggests forming the material recited in claims 1, 7-9, and 61. Zhang does not remedy this failure. For at least this reason, neither Wilcoxon, Ritsuo, Zhang, nor any combination of the three describes or suggests forming the recited material. Therefore, applicant requests reconsideration and withdrawal of the rejection.

Applicant submits that all claims are in condition for allowance.

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Respectfully submitted,

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